

quite the same statement as saying that when that vowel is spoken at all pitches the same cavity is employed.

2. Whether the mouth-cavities for given vowels are supposed to differ phonetically *only* in respect of pitch of maximum resonance. Helmholtz states clearly that in respect of their pitch of maximum resonance they are different, but he does not clearly say whether or no any other differences are essential. There are passages which seem to show that he considers that any resonator of the required pitch (whether in the least like the mouth in shape or material) would answer as well, or nearly as well, as the special mouth-cavity for the production of a given vowel. On the other hand it is at least conceivable that the cavity for, say, *o* may be very different from that for *a* in other respects than simply in the pitch of maximum resonance. As to this we find no statement in the "Tonempfindungen."

In fine we do not see that Prof. Helmholtz, although he has largely added to our knowledge concerning vowels, has laid down any law by which, given the pitch at which any one vowel is to be spoken, the reinforcement of its constituent tones could be even roughly predicted. This prediction could, however, be roughly made upon the constant-cavity theory, and has been made by Mr. Ellis in his valuable additions to the translation of Helmholtz's work. Prof. Helmholtz seems to do little more than tell us the constituents of a series of vowels sung or said on two notes of one scale, coupled with one peculiarity and in some cases two peculiarities of the resonance cavity. He has avoided all general conclusions except that quoted above, which states that the vowel peculiarity depends chiefly on the absolute, and not on the relative pitch of the partials.

In our next communication we hope to be able to state how far the information we have derived by means of the phonograph contradicts, supports, or supplements the above theories.

Edinburgh, May 29

FLEEMING JENKIN  
J. A. EWING

#### Extinct and Recent Irish Mammals

I BEG to thank Prof. Leith Adams for his criticism, in NATURE, vol. xviii., p. 141, of my "Preliminary Treatise on the Relation of the Pleistocene Animals to those now living in Europe" (*Palaon. Soc.*, 1878), in which, from the nature of the work, it is impossible that mistakes should not be. I cannot, however, plead guilty to some of the mistakes which are placed to my credit:—1. That "the Irish elk is placed among the pre-historic mammals in consequence of its presence in the peat-bogs of England, Scotland, and Ireland." What I wrote (p. 6) was that the presence of the extinct Irish elk in the peat-bogs, which are of well-ascertained pre-historic age, renders it impossible to accept Sir Charles Lyell's definition of the term recent, in which no extinct species are stated to occur.

Of course the Irish elk, as Prof. Leith Adams remarks, has long been known to be met with, almost universally, in the lacustrine marls underlying the peat, and it is thus described in p. 27 of Mr. Sanford's and my own Introduction (*Palaon. Soc.*, 1866). I do not know of its occurrence anywhere *in peat*, but at the bottom of peat-bogs, to which the bones of animals suffocated in the peat in all probability gravitate. It seems to me very unlikely that all the remains at the bottom of peat-bogs belong to a period before the peat was accumulated.

2. I have never held, and still less to my knowledge printed, that "man and Irish elk, reindeer, mammoth, horse, and bear, were contemporaneous in Ireland." Evidence of palæolithic man, the contemporary of the mammoth in Ireland, is, so far as I know, altogether wanting. If Prof. Leith Adams will kindly write me a reference to any such statement of mine it shall be corrected at once.

My list of Irish animals, which merely purports to give the principal historic mammalia, does not profess to give all the mammalia, which will doubtless be fully treated in Prof. Leith Adams' promised work.

W. BOYD DAWKINS

Owens College, Manchester, June 9

#### Alternate Vision

MR. GALTON's remark (NATURE, vol. xviii. p. 98), that "sometimes the image seen by the left eye prevails over that seen by the right, and *vice versa*," leads me to describe a curious defect in my own eyesight, which in a different way confirms what he says. While my right eye is fairly long-sighted, my left eye is very short-sighted. For instance, the focal distance

of my right eye for your leader type is 18 inches, and for the left eye only  $8\frac{1}{2}$  inches. For your letter type the focal distance for the one is 16 inches, and for the other  $6\frac{1}{2}$  inches. This is by the light of a Duplex lamp, and by focal distance, I mean the distance at which I can see distinctly. The result of this inequality in my two eyes is that the right—or long-sighted one—involuntarily closes when I read, and I am not aware of its being shut, except when some one who is a stranger to the peculiarity calls attention to it. During the day, however, in looking about both eyes are generally open, though when I look intently at a distant view, I find the short-sighted eye shuts occasionally. But in a general way both eyes are open, and I have two distinct images presented to my brain, one blurred and indistinct, even for faces a yard distant, and the other clearly defined, I believe, to the usual distances. How is it that my brain or mind rejects the blurred image and chooses the distinct one, so that I see everything perfectly clearly. If I get a piece of dust in the good eye, or close it, I immediately see the blurred image, and if this take place in the street, it causes a painful degree of confusion as to distances, &c., so that I am often brought to a standstill by such an occurrence. That both images really are presented to the brain I know. For instance, in travelling by train I frequently amuse myself by placing my eyes so that the short-sighted eye sees a portion of a scene through the window, without the good eye being able to see it. Then I see the blurred image only; but as the train moves the blurred is replaced by the bright one, as the good eye gets to work. The blurred image always appears at a higher level than the other, and it is the same when I shut my good eye for a moment and look at the fire with my bad one. On reopening the good one the blurred fire appears slightly above the bright one, and the latter almost instantly drives the indistinct image away—like a dissolving view. Things appear, as a rule, much flatter to me than to people who enjoy binocular vision. I know this because I have a pair of spectacles so arranged as to equalise my sights. When I put them on, objects like trees put on a delightful fullness and roundness to which I am usually quite a stranger, and the effect is most charming. I may add that two of my brothers have a similar defect of vision.

May 31

J. I. R.

#### The Eskimo at Paris

I HAVE read with great interest in vol. xviii. p. 16 of your renowned journal the article concerning the Eskimo, the exhibition of whom in Paris, &c., has recently made so great a sensation.

Unfortunately, it seems to me, the writer of the article, M. A. Bordier, has been incorrectly informed with regard to the introduction of these people. It is not to Mr. Geoffroy St. Hilaire, the director of the Paris Jardin d'Acclimatation, but to M. Charles Hagenbeck, the well-known and intelligent dealer in wild animals of our town, to whom science is indebted for the introduction both of the Eskimo, the Hamran and other types of the different tribes of Nubia, and the Laplanders.

I should be much obliged to you if you would kindly insert the above correction in an early number of your journal.

Hamburg, May 28

J. D. E. SCHMELTZ

#### The Telephone

HAVING seen a paragraph in NATURE communicated by Mr. Severn, of Newcastle, New South Wales, describing a method of using a telephone to enable deaf persons to hear, I have tried the experiment in the manner Mr. Severn describes—by fastening a string to the parchment diaphragm of a simple telephone made of wood, and carrying this string round the forehead of the deaf person, who clasps the string with both hands and presses them over his ears. The experiment in this way was partially successful; the sound of the voice was always heard, and some words were distinguished. Afterwards I fastened a single string to the telephone and got the deaf person to hold the string between his teeth. He then heard every word distinctly, even when spoken in a low tone of voice at the whole length of the room.

63, Strand, W.C.

JOHN BROWNING

TILL now I have looked in vain for any account in NATURE of experiments with the telephone or phonscope, inserted in the circuit of a selenium (galvanic) element (see NATURE, vol. xvii. p. 312).

One is inclined to think that by exposing the selenium to light,

the intensity of which is subject to rapid changes, sound may be produced in the phonoscope. Probably by making use of selenium, instead of the tube-transmitter with charcoal, &c., of Prof. Hughes, and by exposing it to light as above, the same result may be obtained.

I should be glad to know whether experiments have been made in this direction; for if the above should prove true, there is no doubt that many applications would be the result.

Kew, June 3

J. F. W.

### Meteor

HAVING just seen a magnificent meteor, I send you an account of it, as from its position it may have been seen at Gibraltar.

At 7.30 this evening a large meteor appeared as nearly as possible N.E. by E. of my position, at about 25 to 28° from the horizon, in a wide opening in the clouds, and proceeded with a moderately fast motion towards the north, slightly descending in a path slightly concave to the horizon. I did not see it disappear, as it went behind some bushes which hid the sky between N. by W. and N. by E.; if it disappeared due N. it would have been about 20° from the horizon as estimated by the altitude of the pole-star. The appearance was very remarkable, the head being of a brilliant green and the tail bright red. When I first saw it I took it for a first-class rocket passing at about 300 or 400 yards from me with a bright Bengal light of green colour at its head. The brightness was certainly from 10 to 15 times that of Venus at its brightest. It shone in the twilight more brilliantly than I ever saw Venus against a dark sky. The tail was not persistent as far as I could judge, against the light sky, and no report was heard, though I listened for several minutes. A bright star, which I believe was Vega, was just below it among the clouds, and afforded a fair standard of comparison; it was from thirty to forty times, at least, brighter than this star.

W. A. SANFORD

Funchal, May 27

P.S.—I find that I have forgotten to mention that my position is about two miles south-west of the cathedral of Funchal.

### Multiple Rainbow

ON Saturday evening I (and others) observed a rainbow which presented a very peculiar phenomenon. The primary bow, in the neighbourhood of its apex, was apparently composed of three distinct bows. Just below the violet of the principal bow the bright portion of a second bow was observed, and at about half the distance between the bright portions of these two bows was observed the bright portion of a third bow. The secondary bow looked much as usual, and the principal primary bow was very perfect, so far as I could see, on each side. The repetitions of the primary bow extended only through an angle of 35° or 40°, and did not apparently end at the same point.

Between the point of observation and the sun are some pieces of still water in Bushey Park. Overhead were some clouds upon which the sun was shining. I think the phenomenon was due to the reflection of the sun from the clouds.

R. S.

Hampton Wick, June 1

### Opening of Museums on Sundays

MANY of your readers will be glad to know that the very admirable and extensive museum at Maidstone was opened to the public on Sunday last, and will in future be open on Sunday afternoons from two to six o'clock.

The opening was a great success: the mayor and many of the influential inhabitants were present, and more than 1,000 people visited the museum on that afternoon, the average attendance on week-days being from 50 to 100. The most perfect order was preserved, and every part of the museum received its share of attention, even the library being more than full of readers.

I believe that this is the first and only scientific museum that has yet been opened on Sunday in the United Kingdom, the Art Gallery at Birmingham and Aston Hall being of a different character, and so I have thought it worth while to call your attention to it.

For the sake of those who have not yet visited Maidstone Museum I may say that it is one of the best local museums in the country, having remarkably fine palæontological, conchological, and other collections; that it will well repay a visit, or more than one; and that Mr. Bartlett, the courteous curator, is always ready to give visitors any assistance that he can.

Maidstone itself, and the country round, are well worth visiting. I must not forget to mention the cemetery, which is one of the most beautiful in the country.

10, Bolton Row, Mayfair, W.,

June 10

W. H. CORFIELD,  
Chairman of the Committee  
of the Sunday Society

## THE FISHERIES OF BRITISH NORTH AMERICA

### I.

IT was provided by the Treaty of Washington, that, on payment by the United States of a compensatory sum (to be determined by a Commission) to the Dominion of Canada, the Fishing-grounds of British North America should be entirely thrown open to the fishermen of the Union; those of the United States coast, on the other hand, being opened to the fishermen of the Dominion only as far south as the 39th parallel of N. lat., which is almost exactly that of Washington. While the payment of the compensation since awarded by the Commission is being protested against by not a few influential politicians in the United States, the probable influence of the Fishery clauses on the future of the Dominion of Canada is being carefully considered in those parts of it which they especially affect; and we have before us a very able report on this subject by Mr. H. Y. Hind, M.A., a Member of the Legislature of Newfoundland, of which, as based on a careful scientific study of the physical and biological conditions involved in the questions at issue, we think that a summary will prove interesting to our readers.

It is somewhat startling to be told that "as a maritime power the Dominion of Canada stands *fifth* among the nations of the world." This expression, however, is obviously meant by Mr. Hind to refer, not to its *armed* but to its *commercial* marine, which is only surpassed by that of the Mother country, of the United States, of Norway, and of Italy. Its vessels number more than 7,000, and their registered tonnage amounts to above a million and a quarter tons, increasing at the rate of 60,000 tons per annum; its supply of trained seamen is drawn from a fishing population scattered over 3,000 miles of sea-board; and the annual value of their catch reaches at least 20 millions of dollars. The political importance of sea-fisheries as a nursery for seamen, irrespective of the pecuniary value of the catch, is admitted on all hands; and hence it is that a far-sighted policy looks to the value of the British American Coast fisheries as consisting not only in their present productiveness, but also in the security they afford for the maintenance and permanency of what has of late become one of the greatest industries of the Dominion—the work of ocean-carrying.

Now, while the length of the coast-line in British America not covered by previous treaty-arrangements, which is now opened to the United States fishermen, is about 3,700 miles, and the area of its coastal fishing grounds is about 11,900 miles, the length of the United States coast-line opened to British fishermen, is only 1,030 miles, and the area of its fishing-grounds about 3,500 miles. But the respective values of these grounds are not to be estimated by their relative extent alone; for while the United States fishing-grounds north of the 39th parallel were formerly extremely productive, they are now much less so, chiefly through the improvidence of their own people; the cod-fishery, in particular, having been ruined in a great measure beyond repair. On the other hand, the United States coastal waters south of the 39th parallel still maintain much of their original productiveness, supplying a very large quantity of fish to the markets of New York and the South. But to these prolific fishing-grounds access is forbidden to British-American fishermen, who are thus placed at a great disadvantage compared with those of the United States; the latter being